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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/724,637 | 12/02/2003 | Herve Michaud | 2003-1732A | 2003 |

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| EXAMINER | |
|---|---|
| YEE, DEBORAH | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1742 | |

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/724,637 | HERVE MICHAUD ET AL | |
| | Examiner | Art Unit | |
| | Deborah Yee | 1742 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12-2-03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,6,15,16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Burnett (US Patent 5,906,691).

3. Burnett in Table III of columns 7-8 discloses specific example TMS 80 which meets the claimed composition and is processed is the same manner as claimed by applicant. See lines 24 to 37 of column 6 and lines 10 to 27 of column 7 wherein prior art process comprises the steps of preparing and casting the steel alloy, forging at 1232C (within claimed range of 110 to 1300C) to form a crankshaft crankpin section, air cooling to room temperature (would be equivalent to less than 3C/sec since applicant also air cools), machining, and performing a mechanical reinforcing operation by induction hardening, and tempering (equivalent to annealing since same temperature and time are taught) at 357C or 468C for 3 hours.

4. Also Burnett discloses forging steel to produce a crankshaft crankpin section which would meet the steel forging crankshaft recited by claims 15 to 17.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 to 5 and 7 to 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett et al (US Patent 5,906,691) in view of Hase et al (US Patent 6,454,881) or Watari et al (US Patent 5,922,145)

7. Burnett discloses a method of fabricating a steel part which meets the recited claims as explained in paragraph No.3 but fails to use a steel alloy containing small amounts of B, Ti, Nb or at least one of Ca, Te, Se, Bi, or Pb as recited by claims 2 to 5 and 7. The secondary references (Hase, in columns 5 to 7 and Watari in columns 6 to 13) , each teach an analogous hot forged steel part having a composition which contains these elements to further improve hardness and machinability. Since hardness and machinability are desired and sought by Burnett, then it would be an obvious modification well within the skill of the artisan in view of secondary teaching to add small amounts of B, Ti, Nb or at least one of Ca,Te, Se, Bi and Pb to produce no more than the known and expected effect of such an addition.

8. Burnett in claim 1 of column 12 discloses a steel alloy containing 0.15 to 0.45%C and 0.50 to 1.6% Mn that overlap with those recited by claims 8 and 9 . Moreover specific examples in Table III of columns 7-8 disclose Cr ranging from 0.11-0.12% that

overlap with the 0.05 to 1.5%Cr recited by claim 9. Note that such overlap in wt% ranges establishes a prima case of obviousness because it would be obvious to one of ordinary skill in the art to selected the claimed ranges from the broader disclosure of the prior art since the prior art has the same utility (crankshaft). See MPEP 2144.05

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett et al (US Patent 5,906,691) in view of Heffron et al (US Patent 4044638).

10. Burnett discloses a method of fabricating a steel part which meets the recited claim as explained in paragraph No. 3 but performs mechanical reinforcing operation with induction hardening rather than burnishing as recited by claim 14. The secondary reference, Heffron in the first two paragraphs of column 1, teaches that the conventional method of manufacturing crankshaft for internal combustion engine can be performed by casting or forging to define crankshaft form, machining,and then mechanically reinforcing with grinding and burnishing to produce final bearing finish. Since burnishing is a well known technique in the metallurgical art for mechanically reinforcing the surface of crankshaft , then it would an obvious modification well within the skill of the artisan to substitute induction hardening with burnishing to produce no new and unexpected results.

11. Claims 1 to 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellus et al (US Patent 5,820,706) in view of Heffron et al (US Patent 4044638).

12. Bellus in claims 1 to 14 of columns 5 to 8 and lines 53 to 56 of column 5 discloses forged bainitic steel parts that can be fabricated for automobile components

such as shafts, and are produced in substantially the same manner as claimed by applicant.

13. More specifically, prior art example 2 on lines 1 to 25 of column 5 discloses a steel alloy composition which meets the composition recited by claims 1,2,3,6,and 11, and is processed by hot forging at 1270 to 1040C (within claimed forging temperature range of 110 to 1300C); cooling at 2.6C/sec down to 400C to form bainite (within the claimed range of less than or equal to 3C/s in the range of 600 to 300C).

14. Even though machining is not disclosed, such would be obvious to incorporate since other analogous examples teach machining (see lines 35 –36, column 5).

15. Even though mechanical reinforcing operation is not disclosed, such would be an obvious step well within the skill of the artisan to incorporate since it is a standard conventional step well known in the art when producing crankshafts for automobiles. See Heffron in column 1, first two paragraphs teaches that the conventional method for producing a crankshaft is by forging to form crankshaft followed with machining and burnishing to produce the final bearing finish.

16. Prior art on lines 1 to 27 of column 2 discloses alloying constituents with wt% ranges that overlap or closely approximate those recited by claims 4,5, 7 to 10 and 12.

17. Prior art on lines 7 to 11 in column 4 teaches annealing after forging at 150C to 650C which overlaps with applicant's annealing range of 300 to 500C recited by claim 13. Also prior art annealing can be performed for 1 hour, as shown example 2 on line 15 of column 5.

18. Note that the overlap or close approximation in alloying constituents or annealing temperature establishes a prima facie case of obviousness because it would be obvious to one of ordinary skill in the art to selected the claimed ranges from the broader disclosure of the prior art since the prior art has the same utility (crankshaft). See MPEP 2144.05.

19. As stated in paragraph 15, burnishing is well known technique in the metallurgical to art to mechanically reinforce crankshaft surface as taught by Heffron and would be obvious to incorporate to the method of Bellus to produce a crankshaft,; hence claim 14 would be satisfied.

20. Prior art on lines 52 to 56 of column 5 teaches forgings for automobile components such as shafts which would broadly include crankshaft and hence meet claims 15 to 17.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on Monday-Friday from 6:00 to 2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Deborah Yee
Primary Examiner
Art Unit 1742

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